Rulison Monitoring Results
Noble Energy Well BM 26-42

Well: Gas production well, Battlement Mesa 26-42, API # 05–045–10666. (Pad 26 is near the Rulison, CO, Site.)

Operator: Noble Energy, Incorporated

Sampler: U.S. Department of Energy, Office of Legacy Management, Grand Junction, CO.

Date of Sampling Event: 28 May 2008

Samples of natural gas and produced water were collected from production well BM 26-42. Location data for the surface collection point and the sample location are given in Table 1. A description of the samples collected is found in Table 2.

Table 1. Well BM 26-42, API # 05–045–10666

Sample Point Location	Location	Sample Location						
		Sea Level elevation (feet)	Distance (feet) from		Surface		Distance from GZ (miles)	Heading from GZ (deg)
			N-S Section line	E-W Section line	Latitude (NAD 27)	Longitude (NAD 27)		
Surface	SESW S26 T7S R95W	8961.0	1,242.38 FSL	1,761.51 FWL	39.404446	-107.967221	1.040	W2.0ºS
Subsurface	SESW S26 T7S R95W	164.0	NA	NA	NA	NA	NA	NA

Location data updated 28 May 2008.
NA: not available

The subsurface elevation is at the midpoint of the perforation interval.

Link to Colorado Oil and Gas Conservation Commission information about well BM 26-42
http://oil-gas.state.co.us/cogis/FacilityDetail.asp?facid=04510666&type=WELL

Table 2. Sample Description

Sample Ticket No.	Location			Field Sample Matrix	Analytes	Samp Vol. (L)	Comments
	Name	Type	Sub-type				
NFD-367	BM 26-42	WL	Angl	Gas	3H, 14C	18.8	P_a ~20 psi
NFD-367	BM 26-42	WL	Angl	Water	γ spectroscopy	1	
NFD-367	BM 26-42	WL	Angl	Water	Gross αlpha/βeta	1	
NFD-367	BM 26-42	WL	Angl	Water	3H, Cl^-	~0.1	

3H: tritium 14C: carbon 14 P_a : pressure Cl^-: chloride

The water sample was submitted to Paragon Analytics in Fort Collins, Colorado for the determination of gross alpha, gross beta, gamma emitting nuclides, and tritium. The results are listed in Table 3.

The natural gas sample was submitted to Isotech Laboratories in Champaign, Illinois, for natural gas analysis and the determination of tritium and carbon-14. The gas analysis results are listed in Table 4.

Table 3. Water Sample NFD-367 Results, Paragon Analytics

RESULTS REPORT
RIN: 08051601
Site: Rulison Site
Location: BM 26-42
Ticket Number: NFD 367
Report Date: 7/24/2008

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Standard[1]
H-3	pCi/L	05/28/2008	N001	-73.5	U			20,000
Actinium-228	pCi/L	05/28/2008	N001	16.8	U			
Americium-241	pCi/L	05/28/2008	N001	-10.5	U			
Antimony-125	pCi/L	05/28/2008	N001	6.77	U			
Cerium-144	pCi/L	05/28/2008	N001	5.41	U			
Cesium-134	pCi/L	05/28/2008	N001	-1.82	U			
Cesium-137	pCi/L	05/28/2008	N001	0.318	U			
Cobalt-60	pCi/L	05/28/2008	N001	2.72	U			
Europium-152	pCi/L	05/28/2008	N001	12.8	U			
Europium-154	pCi/L	05/28/2008	N001	-20.6	U			
Europium-155	pCi/L	05/28/2008	N001	-6.09	U			
Lead-212	pCi/L	05/28/2008	N001	5.28	U			
Potassium-40	pCi/L	05/28/2008	N001	46.6	U			
Promethium-144	pCi/L	05/28/2008	N001	0.652	U			
Promethium-146	pCi/L	05/28/2008	N001	-1.28	U			
Ruthenium-106	pCi/L	05/28/2008	N001	-2.88	U			
Thorium-234	pCi/L	05/28/2008	N001	-9.7	U			
Uranium-235	pCi/L	05/28/2008	N001	8.98	U			
Yttrium-88	pCi/L	05/28/2008	N001	-0.0257	U			
GROSS ALPHA	pCi/L	05/28/2008	N001	32.6	U			
GROSS BETA	pCi/L	05/28/2008	N001	92		J		
CHLORIDE	mg/L	05/28/2008	N001	11000				

[1] USEPA Primary Radionuclide Drinking Water Standard.

Table 4. Natural Gas Sample NFD-367 Results, Isotech Laboratories

RESULTS REPORT
RIN: 08051602
Site: Rulison Site
Location: BM 26-42
Ticket Number: NFD 367
Report Date: 7/24/2008

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Standard[2]
Helium	percent	05/28/2008	N001	0.0024				
Hydrogen	percent	05/28/2008	N001	0.0172				
Argon	percent	05/28/2008	N001	0.0027				
Oxygen	percent	05/28/2008	N001	0.503				
Nitrogen	percent	05/28/2008	N001	1.99				
Carbon Dioxide	percent	05/28/2008	N001	3.21				
Methane	percent	05/28/2008	N001	88.77				
Ethane	percent	05/28/2008	N001	3.89				
Propane	percent	05/28/2008	N001	0.963				
Isobutane	percent	05/28/2008	N001	0.179				
Butane	percent	05/28/2008	N001	0.175				
Isopentane	percent	05/28/2008	N001	0.0765				
Pentane	percent	05/28/2008	N001	0.0597				
Hexanes	percent	05/28/2008	N001	0.143				
Carbon-14	Percent modern carbon	05/28/2008	N001	0.4				
Tritium	pCi/L methane	05/28/2008	N001	0.0514	U			

[1] Not detected.
[2] There are no applicable standards for natural gas.

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:
U Analytical result below detection limit.

DATA QUALIFIERS:
F Low flow sampling method used.
G Possible grout contamination, pH > 9.
J Estimated value.
L Less than 3 bore volumes purged prior to sampling.
Q Qualitative result due to sampling technique.
R Unusable result.
U Parameter analyzed for but was not detected.
X Location is undefined.

QA QUALIFIER:
Validated at Level 1 according to quality assurance guidelines.